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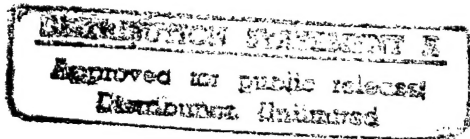
FOCUSED LOGISTICS: "WAR STOPPER MATERIALS" IN CENTCOM THEATER

BY

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A paper submitted to the Faculty of the Naval War College in partial satisfaction of the requirements of the Department of Joint Military Operations.

The contents of this paper reflect my own personal views and are not necessarily endorsed by the Naval War College or the Department of the Navy.



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¹ Chairman, Joint Chiefs of Staff, Joint Vision 2010. Washington DC 1996

Operations Other Than War (MOOTW) will also be discussed.

Focused Logistics is one of the Emerging Operational Concepts outlined in Joint Vision Document 2010 released by Chairman, Joint Chiefs of Staff. " It is the fusion of information, logistics and transportation technologies to provide rapid crisis response, to track and shift assets even while en route and to deliver tailored logistics packages and sustainment directly at the strategic, operational and tactical level of operations. Along with Full-Dimensional Protection concept, our forces can maintain freedom of action during deployment, maneuver and engagement to gain and maintain the initiative required to execute decisive operations."¹

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The experience of Operations Desert Shield and Desert Storm(ODS) underscores the importance of maintaining the production capability in our industrial bases for critical items of military supply and material. During ODS, a number of items were identified as potential "war stoppers". DoD considers an item as a war stopper if it is *critical* in carrying out the mission of military services, has low peacetime and high wartime demand, is military unique, has limited shelf life with limited and dedicated production base capability. Acquisition, supply and maintenance of war stoppers will be discussed in detail. Their application in Joint Military Planning and Military Operations Other Than War (MOOTW) will also be discussed.

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¹ Chairman, Joint Chiefs of Staff, Joint Vision 2010. Washington DC 1996

PREFACE

The purpose of this paper is to synthesize current information on war stopper materials in relation to operational planning. Emphasis will be on Chemical Warfare (CW) threat to our forces as well materials required to conduct and sustain conventional warfare. It is not intended as *backstopping*, or justifying conclusions already reached.

The choice of US Central Command (CENTCOM) Area of Responsibility (AOR) was chosen due to extreme volatility in that region.

The majority of information on war stoppers was obtained from the Defense Logistics Agency Headquarters, Port Belvoir, VA. CENTCOM and PACOM J-5 and J-4 staff also provided guidance. The Naval War College library information specialists also provided relevant information to the author during the course of the research.

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FOCUSED LOGISTICS: "WAR STOPPER MATERIALS" IN CENTCOM THEATER

CHAPTER I

INTRODUCTION

"Weapons of mass destruction-nuclear, biological and chemical --along with their associated delivery systems, pose a major threat to our security and that of our allies. Thus a key part of our strategy is to stem the proliferation of such weapons and to develop an effective capability to deal with these threats."

*1996 US National Security Strategy of
Engagement And Enlargement*

The most daunting threats to our national security we faced during the Cold War have gone away, but new dangers have replaced them. The new post-Cold War dangers make the task of protecting our national security interests different and in some ways more complex than it was during the Cold War. In the United States Central Command's (CENTCOM) vast and diverse Area of Responsibility (AOR), the sources of conflict are deeply rooted and lingering. Given the historical and continuing rivalry that exists between Israel and its Arab neighbors and the continuing distrust that some Arab and other non-Arab neighbors share among themselves, the potential for greater instability exists in the AOR.

With deterrence politics, unprecedented arms race worldwide gave Middle East countries increasingly lethal capabilities to resolve their disputes. The Iran-Iraq War clearly showed that superpowers no longer possessed the exclusive capability to use Weapons of Mass Destruction (WMD) should a lesser developed nation -state chose to do so. It is in response to this regional threat that the US must aggressively pursue several theater strategic initiatives to eliminate regional dangers of Chemical Weapon Proliferation (CWP). Countries in CENTCOM AOR may wrongly turn to the false security chemical weapons may provide them in their quest to solve disputes.

In this paper, CW threat to US forces in CENTCOM AOR is discussed. This author believes that it is the ultimate threat that can drastically affect our strategic Center of Gravity (COG) if any of the nation-states decides to employ them. Other critical war stoppers required to conduct and sustain conventional warfare identified by DoD will also be discussed. The overall focus however, will be on acquisition, supply and distribution of war stoppers and their place in operational planning.

THEATER OF OPERATIONS

Sometimes referred to as "poor man's" nuclear weapons, it is quite obvious that some nation states can be seduced into thinking that CW can provide them with equalizing military capability. Libya, Syria and Egypt have been known to have CW capability. Iran and Iraq have used CW in military conflict. Both countries have indicated that they will not eliminate their CW capability unless Israel eliminates its nuclear capability. Since no one expects Israel to agree to such conditions, tensions in the Middle East will remain high. Given our commitment to Israel and other states in the region, prolonged tensions will eventually lead to conflict.²

Due to our economic and military ties to the region, regional instability is a viable threat to US national interests. Regional conflicts such as the Arab-Israel dispute centered on the Palestinian homeland, Israel security dilemma, conflicts over national resources (e.g. oil and water), repression of minorities and the struggle for dominance threaten stability in this region. Given the Middle East arms buildup during and after the Gulf War, the potential for countries to use CW is high.

The US is working on a regional CW disarmament strategy that discourages development, production and use of CW. There are current diplomatic and political processes affecting Chemical Warfare (CW) such as the Chemical Weapons Convention signed and ratified by 65 countries. For information purposes only, Russia and China have not ratified the treaty and Iraq is not one of the signatories. As of this writing, the Clinton administration is presently working with the Congress and is pushing for ratification. We should continue to utilize various "carrot and stick" approaches such as economic incentives, security guarantees, political pressures and punitive military actions in order to maintain long term peace in the region. Until this is accomplished, the Operational Commander's primary defensive strategy should be against possible CW attacks.

Joint contingency exercises should contain at a minimum, scenarios depicting tactical actions to destroy means of CW employment using operational fires, tactical defensive maneuvers if CW attack is imminent, operational force protection and counter offensive

² Chemical Weapon Proliferation in the Middle East: Time for a Regional Chemical Disarmament Strategy, William B. Horne II, Air War College, Maxwell AFB, AL April 1993 pp. 10

operations. Current and future DoD funding does not have provisions to build the kind of chemical defense structures to protect our forces in garrison or in the field. Real and potential CW threats should always be treated in the worst case scenario when analyzing Enemy Capabilities (EC), relative combat power, opposing and own Courses of Actions (COA) during Commander's Estimate the Situation (CES) process.

CHAPTER II

THE CW THREAT

Over the past 30 years, many countries in the Middle East have obtained credible operational experience in the development, employment and use of CW in armed conflict. The six categories that have received the most attention are listed below along with distinguishing characteristics.³

1. Nerve gases- Colorless, odorless, tasteless. Attacks the nervous system and disrupt bodily functions; most lethal toxins.
2. Blister agents- Liquids that burn and blister the skin after exposure. Mustard gas is a prime example.
3. Choking agents- Highly volatile liquids that irritate and injure the lungs when breathed. Death comes from choking.
4. Blood agents- Enter the body through respiratory system then interferes with the body's use of oxygen causing death.
5. Control, tear and harassing gases. Non-lethal sensory irritants that cause tearing, burning of the skin, nausea and vomiting.
6. Toxins. Highly toxic biologically produced chemical substances which act through injection or inhalation. Often characterized as biological weapons.

Iraq entered the Gulf War with known CW capability and a demonstrated willingness to use it. They used it against Iranian troops and against their own people (Kurds). Although military experts will rationalize that use of CW by Iraq or Iran against US forces is near to impossible due to fear of massive retaliation, most military observers agree that the American public will not tolerate resulting casualties and may demand immediate troop withdrawal.

³ Ibid, pp. 2-3

THE CONVENTIONAL THREAT

Beyond the Arabian peninsula, CENTCOM AOR includes Egypt, other states bordering the Red Sea Lines of Communications (LOC) and South Asian countries west of India. Uncertainty plagues this region. There is Islamic extremism, internal unrest brought about by economic, political and social conditions, nurturing of international terrorism and geographical disputes.⁴

As previously discussed, regional stability is vital to overall US interest. Volatility in this region is a key ingredient in CENTCOM's theater strategy. As the only remaining superpower in the world, the US will be called upon by friends and allies to lead the way in suppressing any threat in this region. It is imperative therefore that the US in its role as "globocop" should be able to deploy a ready force in conflicts likely to be "come as you are wars". Regional analyses should focus on capabilities of each potential belligerent nation-state and corresponding defensive-offensive posture required of US troops in the initial stages of conflict.

Current military strategy does not call for long protracted wars. War stopper materials should be in place at the right time and place to insure smooth execution of operational plans designed to meet or achieve desired end state as dictated by the National Command Authority (NCA).

⁴ United States Central Command, 1996 Posture Statement, (Macdill, Air Force Base, FL 1996) p. 1

CHAPTER III

PROGRAM MANAGEMENT

Prior to enactment of the National Defense Authorization Act for FY 1992, House Resolution Report No. 102-311 submitted the following conference report:

"The experience of Operation Desert Storm (ODS) underscores the importance of maintaining the production capability in the industrial base for critical military supply and material. During ODS, a number of items were identified as potential "war stoppers," including chemical antidote autoinjectors; chemical protective gloves, chemical protective suit ensembles; combat rations, including Meals, Ready -to -Eat (MRE's) and Tray pack Rations (T-rations); combat boots, including cold weather boots; and barrier materials. The Defense Department considers an item to be a "war stopper" if it is critical to carrying out the mission of the military Services and has a large surge or mobilization requirement, but peacetime buys are insufficient to maintain an industrial activity. Often these critical items have limited shelf lives and long production lead times.

Now that the production surge requirement of ODS has ended, there are pressures to cut back on the acquisition of these critical items and close production lines. The result could very well be the loss of critical production capability that is essential to meet surge requirements like ODS in the future.

The conferees direct the Defense of Defense to take necessary steps to ensure maintenance and stability of the industrial base for critical "war stopper" items in the future. The conferees direct the Secretary of Defense to submit a reports to the congressional defense committees no later than January 31, 1992 on the approach it has selected and how that approach will be implemented."⁵

The items identified in this report are produced by sectors of the industrial base that are supporting defense-unique requirements. Currently, there is little or no commercial application for these products. Commercial processes may be similar and, in some cases, the same. However, Occupational Safety and Health Administration (OSHA), Environmental Protection Agency (EPA), Food and Drug Administration (FDA) regulations concerning chemical ingredients and solvents used for DoD applications may require specialized equipment and facility operating requirements.

Program challenges faced by Defense Logistics Agency(DLA) included low peacetime demand, limited shelf life and limited production base for these military unique items. DLA pursued a variety of alternatives to help alleviate concerns about current and future production of these items. The key consideration is identification of commercial items to replace or augment current and future war stopper items. In those instances where unique

⁵ U.S. Congress, House, Committee on Appropriations, Conference Report, HR No. 102-311. Staff Report, Washington: U.S. Govt. Print Off., 1992

military items are required, incentives were created for suppliers to seek commercial markets. Other actions were extending delivery schedules to enable the base to remain warm through continued production, reducing number of suppliers in active production while retaining others through maintenance contracts and finding companies with a similar commercial product who are willing to produce the DOD item on as needed basis.

PROGRAM FUNDING

Program Objective Memorandum (POM) 98-03 addressed Industrial Based Maintenance Contract (IBMC) required funding to reflect DOD's commitment to insure availability of war stopper materials for military service use. Below is an executive summary of critical war stoppers and current status.

NERVE AGENT ANTIDOTES

Senate Armed Services Committee Report (July 1991, page 84) directed Secretary of Defense (SECDEF) to take necessary steps to ensure maintenance and stability of the industrial base for Nerve Agent Antidote Autoinjectors. Nerve Agent Antidote (NAA) is an integral part of the chemical protective ensemble and consists of a suite of three types of autoinjector products, atropine, 2-PAM Chloride and the Mark I Kit. NAA autoinjectors are an integral part of the chemical defense equipment listed on the Joint Staff Commanders-in-Chief's Critical Item List.

Since 1992, the only sole FDA approved producer, Survival Technologies Inc., (STI) has remained in a "warm base" via IBMC providing wartime surge and other necessary services.

Another type of autoinjector, Diazepam was added to the FY 96 production base and beyond (FY 2003). Under the present IBMC, the contractor agrees to accept 330,000 diazepam injectors per year under the shelf-life extension program in addition to the NAA.

NAA autoinjectors are military unique and were developed for use on the battlefield to inject antidote solution through clothing into the body by the service member. The autoinjector is designed to be injected through the protective clothing with reduced manual dexterity from chemical protective gloves. While the autoinjector device is military unique, it is sterile filled using commercial techniques and practices in the pharmaceutical industry. The syringes and syringe needle units used in civilian medical practice are not acceptable for

NAA application (i.e. battlefield environment). Moreover, the autoinjector device is not generally acceptable in the commercial market where injections are generally administered by trained medical personnel using syringe and needle separate from the vial of medicine. Total projected cost through year 2003 is \$54 million.

CHEMICAL PROTECTIVE GLOVES

Chemical protective gloves are an integral part of the Chemical Protective Ensemble. IBMC's currently maintain two glove producers. The butyl rubber material used in gloves is the only known substance that can meet the required performance standards for protection against all chemical and biological agents under all required operating environments. **A specific concern is the protection against use of mustard gas.** The availability of these gloves is the pacing constraint for the entire chemical protective ensemble. Production facilities are unique and dedicated to glove production with little to no commercial use for the butyl rubber glove. Total projected cost through year 2003 is \$39 million.

CHEMICAL SUITS

Charcoal impregnated liners used in Battle Dress Overgarment (BDO) were originally produced under an IBMC. During ODS however, the Marine Corps began to purchase a new suit technology known as Saratoga. Following ODS, the Joint Service Coordination Committee for NBC Defense designated the Saratoga technology as an interim suit until a more effective suit is developed. The Saratoga uses a liner technology developed by a foreign source. For information only, DOD is transitioning the Chemical Protective Overgarment (CPO) from Battle Dress Overgarment (BDO) to Joint Service Lightweight Integrated Suit Technology (JLIST).⁶ The JLIST is now being developed as the replacement chemical protective suit. The Saratoga capability will be maintained until the JLIST can be fielded and a responsive industrial base can be established to meet wartime needs. A primary concern is that the new liner system will probably be from a sole proprietary foreign source with insufficient production capacities to meet wartime needs and Defense Planning Guidance

⁶ Defense Logistics Agency, Annual Warfighting Assessment Report. Washington: December 1996

(DPG) to replenish War Reserve Material (WRM) stocks. Funds were requested to establish a second source, preferably domestic. Total projected cost through year 2003 is \$23 million.

MEAL, READY-TO-EAT(MRE)

MREs are DoD's main operational rations and are used primarily by ground forces. They are primary war reserve items and are prepositioned worldwide. The three year acquisition since FY 93 resulted in a large inventory of 6.1 million cases and will be "eaten down". Yearly procurement is expected to approximately equal peacetime demand from the established industrial base. Future buys are not anticipated at this time. To no one's surprise, there is no commercial market for MRE's.

TRAY PACK PRODUCTION EQUIPMENT

Tray pack rations offer thermostalized foods packaged in rectangular, multi-serving, half-size, steamtable cans which can be stored for three years. The advantage of the tray pack is that it includes quality hot meals served to combat troops with a reduction in preparation time, fuel, water and labor. Only the military services use half-size steam table cans in large quantities. The U.S. Army is the principal user of tray packs and the Marine Corps have limited use while the Air Force and Navy have no requirements.

Storage and maintenance of unique tray pack production equipment are necessary to meet wartime requirements. Previous purchase of this equipment afforded the opportunity to maintain base at the lowest rate of peacetime procurement and ability to quickly expand production in times of war 20 times over peacetime rates. Funding was requested for transportation, storage and maintenance of this equipment. Total projected cost through year 2003 is \$1.6 million.

BIO-CHEMICAL DEFENSE

Military unique biomedical defense vaccines and chemical agent defense pharmaceuticals are still under development at this time by the US Army. Some of these items have very short shelf-lives, low manufacturing yields, require government backed indemnification and may require further FDA approval. Once developed, services will fulfill their wartime requirements and DLA will maintain a military unique industrial base capability that can meet DPG replenishment and service requirements.

Initial DLA contact with prospective manufacturers shows little interest in producing these items due to lack of peacetime demand, lack of commercial applicability and the need for separately contained and dedicated facilities for each vaccine not to mention liability issues. IBMC 's will be established to meet requirements. Total projected cost through year 2003 is \$8 million.

PROGRAM SUMMARY

Industrial Base Maintenance Contract (IBMC) is the quick solution to supporting both surges and programming requirements of war stopper material. Funding has been requested to develop and maintain IBMC under POM 98-03.

Currently, services are responsible for acquiring war stopper materials for prepositioning as WRM, training and spares. In view of austere budgets and declining peacetime requirements, operational commanders should ensure that service component commanders maintain strict liaison with service chiefs as to availability of these items.

Other war stoppers include critical drug and vaccines such as:

1. Immune serum gamoglobin
2. Malaria vaccine
3. Plague vaccine
4. Broad spectrum antibodies
5. Burnt creams

Defense Planning Guidance (DPG) considered the following as war stoppers:

1. Medical rotational stocks
2. Industrial readiness for:
 - Reverse Osmosis Water Purification Unit
 - Cots
 - Inflation assemblies
 - TF 3 engines for C-5 aircraft
 - Heavy Expanded Mobility Tactical Truck (HEMTT)

Majority of these items already met WRM or DPG requirements and are not discussed in this paper.

CHAPTER IV

ACQUISITION, SUPPLY AND MAINTENANCE

"Outsourcing," the practice of significance reliance on the commercial sector for goods and services provided to DoD, and current acquisition reforms play a crucial role in the acquisition, supply and maintenance of war stopper materials. Outsourcing allows DoD to take advantage of companies specializing in a given product or service. It also provides the government means to take advantage of technologies and systems that the government itself will not acquire or can operate economically. Outsourcing can also generate savings through lower costs and improved quality.

DoD however should be cautious when outsourcing materials that constitute the core of our warfighting mission. Are war stopper materials critical to our warfighting mission that they should not be outsourced?. The service chiefs should make this determination and if it would create undue risk to inform DLA (buying activity) of their decision. Service chiefs should also undertake appropriate business case analyses to determine risk and feasibility keeping in mind material that would be used to meet the two Major Regional Conflicts (MRC) scenarios.

Peacetime operational intelligence should emphasize working closely with allies to create intelligence exchange agreements. In this case, interoperability can be further enhanced via joint or combined training exercises. CENTCOM's J-2 and J-3 staff can provide valuable intelligence data from these exercises for use by the Joint Service Coordination Committee for NBC defense, DLA, service component commanders and service chiefs. This process will allow continuous development, coordination and integration of applicable war stopper materials strategy.

War stopper materials can be prepositioned as either starter stocks or swing stocks, or a combination of both. Starter stocks are those that are located in or sufficiently near a theater of operations to support conduct of military operations until resupply at wartime rates is established. Swing stocks are positioned afloat or ashore and are capable of supporting requirements of more than one contingency in more than one theater of operations. Swing stocks will be used to complement starter stocks as a follow-on source of supply in a regional contingency. Prepositioning can be either afloat or ashore or combination of both. Ashore,

storage will depend on negotiated host-nation support agreements. If these are not feasible, war stoppers can be flown via Military Airlift Command (MAC) using existing Air Mobility Channels (AMC). Depending on the initial crisis response team composition (e.g. ARG, CVBG, Airborne, etc.) war stopper material can also be delivered via existing Naval logistics support systems.

CHAPTER V

RECOMMENDATIONS

Potential enemies know our strategic COG and chemical warfare can be one of the cheapest weapons they could use to attack it. How will we protect our own forces from the readily available chemical weapons systems being shopped around CENTCOM AOR and the Third World?. Increasingly, tactical decisions on reactions from CW will have to be made in real time and should be one of the core foundations of Crisis Action Planning as well as Deliberate Planning. Many of our potential opponents believe that they could only have to get "lucky" to raise stakes high enough to either break apart a coalition or place great pressure at home on American decision makers. "The unexpected must be expected. In planning for the future, we know we may go wrong, the trick is not to be too wrong."⁷ CW or threat thereof, can be used for both defensive and offensive purposes by our potential enemies. This alone will not only limit U.S. troop maneuverability but even re-direct initial offensive actions. What may be a limited war to the U.S. may be a war of national survival or destiny for a less powerful opponent. Some of our prevailing doctrines such as the Army's concept of attack- in- depth may be neutralized by a CW attack, from opponents who have no match to U.S. forces in relative combat power. In addition, prolonged preludes to war may consume CW war stoppers as quickly as the war itself.

Operational level decisions in these scenarios will be dictated at the tactical level. Mission statements should continue to address the "chemical trump card" issue. We have the technology to determine whether an area is chemically safe during an offensive situation including movement into an enemy's territory. Excellent chemical detectors already exist and are deployed.

For conventional warfare or MOOTW, we should continue to adopt the expeditionary mindset. The following are recommended:

1. Acknowledge the fact that they may occur in theaters with underdeveloped or severely limited supporting infrastructure.

⁷ "Reflections on the Corps: Some Thoughts on Expeditionary Warfare" Marine Corps Gazette, March 1995, Vol. 79, No. 3, pp. 26-29

2. "No Plan " contingency operations will call for rigorous and prompt logistics support even before actual troop deployment. J-4 staff should ensure critical war stoppers are in place prior to troop arrival either by additional airlift or airdrop at a later date.

3. Multinational operations- Joint Task Force (JTF) commanders should determine appropriate protection measures that extend from NBC warning to decontamination procedures. During planning process, provisions should be made for facilities required to decontaminate and the US may take the lead for providing technical experts. Protection of coalition forces from chemical attack may also be borne by the U.S. due to its advance technology or availability of support material.

4. Logistics support ability involving war stopper materials should be continuously tested in every CINC scenario based planning. Expeditionary logistics doctrine should be adopted at the CINC level if the services will continue to be responsible for their own logistics support.

5. Joint Military Net Assessment (JMNA) and Logistics Sustainability Analysis (LSA) within Joint Strategic Planning System (JSPS) should integrate "war stopper " material scenarios especially during post-conflict operations where threat of CW can be possibility-- as an opponent's final "kamikaze" act .

MOOTW will continue to deplete our resources earmarked for major contingencies. As we restructure and downsize, we have become principally a CONUS based power projection force that must plan for and be prepared to engage in multiple regional conflicts.

CHAPTER VI

CONCLUSIONS

DoD has invested great sums of money in chemical protection and defenses. Our detectors, collective protection kits and individual protection kits appear to be adequate. Chemical weapons, while devastating against people without protection, are relatively little threat against people with modern protective equipment.⁸ The American people are not going to tolerate high casualties in **any** military operations. Casualties due to or exposure from chemical weapons can create a string of investigations that can range from Pentagon cover-up⁹ to inept military planning.

The Clinton Administration has been pushing to obtain Senate ratification of a treaty banning chemical weapons. The treaty prohibits the development, production and use of such arms and it calls for the destruction of factories producing them. More than 65 countries have ratified the pact, due to go into effect on April 29, 1997. China and Russia have also failed to ratify the accord; Iraq did not sign it.¹⁰ Militarily, this treaty should make us stronger. During the Bush administration, our nation's leadership decided to retire our chemical weapons. It was based on the fact that chemical weapons are not useful for us- and this decision was made not because of treaties. Opponents argue that the treaty is not perfect, verification is not absolute, not every nation will join at first, the US chemical industry stands to lose over \$600 million a year etc. If we don't ratify, some nations will use it as an excuse to keep their chemical weapons and our diplomatic credibility of threat of retaliation against anyone who uses chemical weapons to our forces will be undermined by our lack of "clean hands".¹¹

One of the self-declared reasons for the acquisition of WMD by developing states is the desire to deter the U.S. from regional intervention. Two possible major MRC scenarios

⁸ American Association for the Advancement of Science, Chemical Weapons and Security in the Middle East, Proceedings from a Congressional Briefing (Washington: 1990) p.16

⁹ John Diamond, "Schwarzkopf Defends Gulf War Logs", The Washington Post, 10 January 1997, pp. 8

¹⁰ Alison Mitchell, "New Push for a U.S. Chemical -Arms Pact Vote", The New York Times, 14 January 1997, pp. A8

¹¹ E. R. Zumwalt Jr., "A Needless risk for US Troops", The Washington Post, 06 January 1996, pp. 23

presented by Andrew Krepinevich of the Center for Strategic and Budgetary Analysis (CSBA) may be worthy of discussion. One, 'The Street Fighter State' creates a scenario of war between Iran and all Western powers. The other, "Great Power Competition : The Blockade of Taiwan is an eerie prediction of China declaring a total sea blockade between China and Taiwan while assuring Japan, Korea and other neighbors that they will not be affected if they do not assist the US.¹² Both scenarios he worked out suggest future US OPLANS should address critical availability of war stopper materials since both belligerents possess WMD. Perhaps our strongest viable deterrence to CW use by a potential enemy should be direct communication at the highest levels and explicit delineation of the full spectrum of US capabilities available that would be overwhelming and devastating.¹³ The U.S. should not be perceived as vulnerable to these states' coercion. Deterrence by denial has proven to be effective, at least in the Persian Gulf War and should be a cornerstone of any deterrence strategy.¹⁴ In 1995, we had between 40,000 and 50,000 troops involved in contingency operations throughout the world. When we think about changing the political and social structure of a country to protect or promote US interests, it is imperative that our people who make the difference, should be adequately supported and protected. The Congress and DoD clearly understand this and their collective action to immediately resolve the issue ensured America's Armed Forces continue to maintain military excellence and superiority.

¹² David Silverberg, "Alternative Visions", .

¹³ Keith B. Payne, "Deterring the Use of WMD: Lessons from History", Comparative Strategy, Vol.14, October 1995, pp. 355

¹⁴ Ibid., pp. 357

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